The Falcon St Pedestrian Bridge was designed by Aurecon for the RTA to provide a safe link across the 18 lanes of the Warringah Freeway for pedestrians and cyclists and to connect regional cycling routes.

The superstructure is a horizontally and vertically curved single steel box girder. The bridge has five continuous spans totaling 220m with two central spans 65m each in length. The architectural requirement to optimize the slenderness of the bridge constrained the design depth of the girder to 1500mm. This design achieved a very slender, long spanning bridge which kept as low as possible to obtain minimum clearance over the Falcon St on and off ramps, not impede the vertical plane and fully achieve disabled access grades.

The location of the piers is highly constrained by the Warringah Freeway carriage ways and the new Falcon St on and off ramps. The architectural design kept the piers to 600mm wide blade piers to accentuate the slenderness and add elegance to the design.
Title: Griffith University Cable Stayed Pedestrian Bridge

The Griffith University Gold Coast Campus is situated on the northern side of the Smith Street Motorway, approximately 3 kilometres to the west of Southport. As part of the planned expansion to the University, land was purchased on the southern side of the Motorway for additional University buildings and a new student accommodation centre. As such it was essential have a pedestrian link across the busy Motorway. The University was also keen to have an iconic structure to promote the University to the passing traffic.

The transport planning for the Gold Coast includes expanding the Motorway from 2 to 3 lanes in each direction, providing bus lanes with bus set downs areas at the University and a light rail linking the main Gold Cost rail line at Nerang with Southport and Surfers Paradise. The overall length of the bridge required to accommodate all these future initiatives was 96 metres.

In March 2006 Abigroup Contractors Pty Ltd were awarded the contract to design and construct the pedestrian bridge for the commencement of the University year 2007 and opening of the accommodation centre. Working in partnership with Griffith University, Abigroup and SKM developed seven different engineering configurations for evaluation. The University selected the most iconic of these options being a cable stayed steel structure. The option comprised a single tower bisecting a 63 metre main span and 33 metre back span.

Recognising that steel fabrication was programme critical to the success of the project Abigroup and SKM worked closely with the steel fabricators to produce a design that could be efficiently installed at the busy Motorway site. This included using a full steel box section for the deck, bolted splices, grout filled steel tubes for the outriggers and using temporary supports with hydraulic jacks to control the profile of the deck prior to stressing the stays and monitoring the remaining loading on the supports after the stressing.

After a very short design and construction period, the bridge was opened on time and has since received tremendous accolades from the University and other local stakeholders.
Sinclair Knight Merz was engaged by Abigroup in 2005 to undertake the road and infrastructure design of the Albury-Wodonga Hume Freeway Project for the Roads and Traffic Authority of NSW. The 17.4km section of road links the Hume Freeway at Wodonga with the existing Hume Highway at Ettamogah. The brief for the SKM Sydney Bridge Group included the detailed design of seventeen road, pedestrian and railway bridges of which one bridge in particular was to be a statement structure for the City of Albury.

This is a 134m long pedestrian bridge which spans across the Great Southern Railway Lines and the new Hume Freeway to link Dean Street with the East Albury Cycleway, thereby linking the Albury CBD with the community on the eastern side of the Freeway.

The bridge has two 67m spans with a central pier between the Rail and Freeway corridors. Given the span lengths of the bridge and the intention to create a landmark structure at the eastern end of the main street of Albury it was agreed with the RTA during the post-tender discussions that the pedestrian bridge should be a cable stayed structure. The design included the provision of:
- a span configuration to accommodate the site topography, foundation materials and design constraints for the Rail and Freeway corridors
- aesthetic qualities consistent with an iconic structure
- close liaison with Abigroup to achieve a detailed erection procedure satisfying all design, constructability, and risk issues
- investigation of the dynamic response of the cable-stayed structure to vertical and lateral pedestrian excitation employing non-linear transient dynam analyses on Strand7 software in accordance with AS5100.2 guidelines
- a construction sequencing analysis using Strand7, with independent confirmation using Microstran

The success of this bridge project can be measured by its very favourable public acceptance. This was to a large extent achieved by the close interaction between the designers and the construction contractor.
Title: The Design and Construction of the Maylands Recreational Path Bridges Over an Environmentally Sensitive Wetland with Water-Filled Clay Pits

The Maylands Principal Shared Path (PSP) is a recreational and commuter cycling & pedestrian path located along the western foreshore of the Swan River between Banks Reserve and Bardon Park. It provides the ‘missing link’ of the last 20 years for the completion of the regional cycling network path between the Perth CBD and Midland.

The construction project was awarded to Works Infrastructure in August 2005 and completed in June 2007. The site conditions provided significant challenges to the design and construction teams, notably soft river bank materials, natural groundwater streams, acid sulphate soils, reeds and impassable vegetation, protected wetland vegetation and wildlife.

The route alignment planning was undertaken in close liaison with the local authorities, the community and Swan River Trust. The design included the development of two bridge crossings requiring 25m spans over existing water filled clay pits in the wetland area.

The bridge designs required an innovative approach that mitigated the environmental and visual impact on the wetland, and the adjacent residential views and security. The alignment was minimized to 1500 mm clearance between the water and path levels. To provide an aesthetic design for the bridge deck, and to clear the water surface to allow natural light under the deck, the developed deck elevation comprises a variable depth, composite steel and concrete twin girder deck with a very thin central span section of span / depth ratio ~36. This solution required the adoption of a counter-balance abutment with tension screw piles to resist the substructure loads, and to enable a slender superstructure design. Construction principles from large bridge construction were employed for this scaled down very slender single span solution.

The design and construction of the Maylands PSP, was one of the most difficult PSP path projects attempted in the Perth Metropolitan area. With a partnering approach, the PSP and bridges have been constructed with minimal impact on the wetlands, providing an attractive crossing of the clay pit meeting the environmental and heritage requirements for the sensitive river foreshore development.

This project was adjudged a winner of the CCF EarthAwards 2007.